

Region III Plan Summary

Title: Redesignation Request and Associated Maintenance Plan for the Baltimore, Maryland Nonattainment Area for the 1997 Annual Fine Particulate Matter Standard

Federal Register Dates: (Final Rule) – December 16, 2014 79 FR 75032; Proposed Rule - October 3, 2014 79 FR 59703

EPA Effective date: December 16, 2014

State Submittal Date: December 12, 2013

Affected Area: Baltimore Area

Key Features: The Environmental Protection Agency (EPA) approved the State of Maryland's request to redesignate to attainment the Baltimore, Maryland Nonattainment Area (Baltimore Area or Area) for the 1997 annual fine particulate matter (PM_{2.5}) national ambient air quality standard (NAAQS) under section 107(d)(3)(E) of the Clean Air Act (CAA). EPA has determined that the Baltimore Area attained the standard and has determined that it continues to attain the standard. In addition, EPA approved, as a revision to the Maryland State Implementation Plan (SIP), the Baltimore Area maintenance plan to show maintenance of the 1997 annual PM_{2.5} NAAQS through 2025 for the Area. The maintenance plan includes the 2017 and 2025 PM_{2.5} and nitrogen oxides (NO_x) mobile vehicle emissions budgets (MVEBs) for the Baltimore Area for the 1997 annual PM_{2.5} NAAQS, which EPA has approved for transportation conformity purposes.

EPA previously determined that the Baltimore Area had attained the 1997 annual PM_{2.5} NAAQS and that it had done so by its applicable attainment date. See 77 FR 30208, May 22, 2012. In this rulemaking action, EPA is proposing to find that the Area continues to attain the standard. EPA is, therefore, proposing to approve MDE's request to change the designation for the Baltimore Area from nonattainment to attainment for the 1997 annual PM_{2.5} NAAQS.

Monitoring Network:

The PM_{2.5} quality-assured, quality-controlled, and state-certified 2009-2012 air quality data shows that the Baltimore Area continues to attain the 1997 annual PM_{2.5} NAAQS. The Area's PM_{2.5} annual design values for the 2009-2011, and 2010-2012 monitoring periods as well as preliminary data for 2013 are provided in Table 1.

Table 1. Design Values in the Baltimore Area for the 1997 Annual PM_{2.5} NAAQS

| Monitor ID | Monitor location | Annual Design Value (in µg/m ³) | | |
|-------------|----------------------------------|---|-----------|-----------|
| | | 2009-2011 | 2010-2012 | 2011-2013 |
| 24-003-1003 | Glen Burnie, Anne Arundel County | 10.9 | 10.7 | 10.0 |
| 24-005-1007 | Padonia, Baltimore County | 10.1 | 9.6 | 9.0 |
| 24-005-3001 | Essex, Baltimore County | 11.1 | 11.0 | 10.3 |

| | | | | |
|-------------|--------------------------|------|------|------|
| 24-025-1001 | Edgewood, Harford County | 9.8 | 10.3 | 10.3 |
| 24-510-0006 | Baltimore City | 10.0 | 10.0 | 9.9 |
| 24-510-0007 | Baltimore City | 10.2 | 9.9 | 9.3 |
| 24-510-0008 | Baltimore City | 10.9 | 10.4 | 9.9 |
| 24-510-0040 | Baltimore City | 11.3 | 11.1 | 10.5 |

The Baltimore Area's recent monitoring data supports EPA's previous determinations that the Area has attained the 1997 annual PM_{2.5} NAAQS. In addition, as discussed subsequently with respect to the Baltimore Area's maintenance plan, the State has committed to continue monitoring ambient PM_{2.5} concentrations in accordance with 40 CFR part 58. Thus, EPA is proposing to determine that the Baltimore Area continues to attain the 1997 annual PM_{2.5} NAAQS.

There are eight PM_{2.5} monitors in the Baltimore Area. EPA has determined that Maryland's maintenance plan includes a commitment to continue to operate its EPA-approved monitoring network, as necessary to demonstrate ongoing compliance with the NAAQS. The Baltimore Area maintenance plan includes the State's commitment to continue to operate and maintain its PM_{2.5} air quality monitoring network, consistent with EPA's monitoring requirements, as necessary to demonstrate ongoing compliance with the 1997 annual PM_{2.5} NAAQS. In its December 12, 2013 submittal, Maryland states that it will consult with EPA prior to making any necessary changes to the network and will continue to quality assure the monitoring data in accordance with the requirements of 40 CFR part 58.

Contingency Plan Triggers and Contingency Measures:

As explained in greater detail in the Baltimore Area maintenance plan, the candidate contingency measures include the following: (1) PM_{2.5} RACM determinations; (2) NO_x RACM determination; (3) Non Road diesel emission reduction strategies; (4) low sulfur home heating oil requirements; (5) alternative fuel and diesel retrofit programs for fleet vehicle operations; and, (6) wet suppression upgrade requirements for concrete manufacturing. EPA finds that the Baltimore Area maintenance plan includes appropriate contingency measures as necessary to ensure MDE will promptly correct any violation of the NAAQS that occurs after redesignation. Finally, the maintenance plan establishes a schedule for implementation of contingency measures if needed, and MDE has committed to full implementation of contingency measures or programs within 24 months after notification by EPA that contingency measures must be implemented or 27 months after quality assured data indicates an exceedance or violation has occurred.

Maintenance Plan:

EPA has reviewed the documentation provided by MDE and found the emissions inventory to be approvable. For more information on the 2007 inventory submitted by MDE and EPA's analysis of the inventory, see Appendix A of the State's submittal and EPA's emissions inventory TSD dated July 23, 2014, both of which are available in the docket for this rulemaking action.

To show that the Baltimore Area will remain in attainment, MDE uses projection inventories derived by applying appropriate growth and control factors to the 2007 attainment year emissions inventory. MDE developed projection inventories for an interim year of 2017 and a maintenance plan end year of 2025 to show that future emissions of SO₂, NO_x, PM_{2.5}, VOC, and

NH₃, will remain at or below the 2007 emissions levels throughout the Baltimore Area through the year 2025.

Emission Inventories:

Table 2 shows the inventories for the 2007 attainment year, the 2017 interim year, and the 2025 maintenance plan end year for the Baltimore Area.

Table 2. Comparison of 2007 attainment year inventory with 2017 and 2025 projected emissions in the Baltimore Area (tpy)

| | 2007 | 2017 | 2025 | Change from 2007 - 2017 | Change from 2007 - 2025 |
|-------------------|---------|---------|---------|----------------------------|----------------------------|
| SO ₂ | 103,510 | 24,714 | 24,620 | 78,796 | 78,890 |
| NO _x | 116,595 | 69,258 | 58,249 | 47,337 | 58,346 |
| PM _{2.5} | 19,005 | 16,374 | 16,205 | 2,631 | 2,800 |
| VOC | 64,416 | 46,800 | 44,302 | 17,616 | 20,114 |
| NH ₃ | 4,117 | 3,905 | 3,930 | 212 | 187 |
| Total | 307,643 | 161,051 | 147,305 | 146,592 | 160,337 |

Table 2 shows that between 2007 and 2017, the Baltimore Area is projected to reduce SO₂ emissions by 76.1 percent, NO_x emissions by 40.6 percent, PM_{2.5} emissions by 13.8 percent, NH₃ by 5.1 percent, and VOC by 27.3 percent. Between 2007 and 2025, the Baltimore Area is projected to reduce SO₂ emissions by 76.2 percent, NO_x emissions by 50.0 percent, PM_{2.5} emissions by 14.7 percent, NH₃ by 4.5 percent and VOC by 31.2 percent. The projected emissions inventories show that the Baltimore Area will continue to maintain the 1997 annual PM_{2.5} NAAQS during the 10 year maintenance period.

Mobile Vehicle Emissions Budgets (MVEBs):

MVEBs for Baltimore Area, Maryland for the 1997 PM_{2.5} NAAQS in tpy

| Year | PM _{2.5} | NO _x |
|------|-------------------|-----------------|
| 2017 | 1,218.60 | 29,892.01 |
| 2025 | 1,051.39 | 21,594.96 |

Emission Reductions:

In making this demonstration, Maryland has calculated the change in emissions for the on-road sector between 2002, one of the years used to designate the Area as nonattainment, and 2007, one of the years the Area monitored attainment, as shown below.

Comparison of 2002 Nonattainment Year and 2007 Attainment Year Reductions for On Road Emissions in the Baltimore Area (tpy)

| | 2002 | 2007 | Decrease |
|-------------------|------------|-----------|-----------|
| SO ₂ | 2,025.51 | 385.34 | 1,640.17 |
| NO _x | 76,060.01 | 49,140.12 | 26,219.89 |
| PM _{2.5} | 2,344.86 | 1,789.28 | 555.52 |
| VOC | 28,060.25 | 19,998.51 | 8,061.74 |
| NH ₃ | 1,402.09 | 91.77 | 1,310.32 |
| Total | 109,892.72 | 71,405.02 | 37,787.64 |

The reduction in emissions and the corresponding improvement in air quality from 2002 to 2007 in the Baltimore Area can be attributed to a number of regulatory control measures that have been implemented in the Baltimore Area and contributing areas in recent years.

Conclusion: EPA took final action on the redesignation request and SIP revision submitted by the State of Maryland on December 12, 2013, for the Baltimore Area for the 1997 annual PM_{2.5} NAAQS. First, EPA is approving Maryland's redesignation request for the 1997 annual PM_{2.5} NAAQS, because EPA has determined that the request meets the redesignation criteria set forth in section 107(d)(3)(E) of the CAA for this standard. Second, EPA found that the Baltimore Area is attaining and will continue to attain the 1997 annual PM_{2.5} NAAQS. Third, EPA approved the associated maintenance plan for the Baltimore Area as a revision to the Maryland SIP for the 1997 annual PM_{2.5} NAAQS because it meets the requirements of section 175A of the CAA. EPA also approved the 2017 and 2025 PM_{2.5} and NO_x MVEBs submitted by Maryland for Baltimore Area for transportation conformity purposes. Approval of this redesignation request will change the official designation of the Baltimore Area from nonattainment to attainment for the 1997 annual PM_{2.5} NAAQS.

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